Claims

1. Temperature sensor (10) for use in hot runner systems with a resistance element (20) adapted for connection to a control circuit of a heating system (40) by connection contacts (30), **wherein** the resistance element (20) has at least one sub-segment (24) on its longitudinal or cross-segmental extension which has a greater electric resistance than the remaining area (22) of the resistance element (20).

2. Temperature sensor as defined in claim 1, **wherein** the resistance element (20) consists of at least one segment (22) and at lest one sub-segment (24), the electric resistance of the sub-segment (24) being greater than the electric resistance of the segment (22) at a pre-specified temperature.

3. Temperature sensor as defined in claim 1, **wherein** the electric resistance of the sub-segment (24) is at least one order of magnitude greater than the electric resistance of the segment (22), preferably by a factor of 2 to 100.

4. Temperature sensor as defined in claim 1, **wherein** the segment (22) and/or the sub-segment (24) form a U-shaped arc or a loop.

5. Temperature sensor as defined in claim 1, **wherein** the segment (22) and/or the sub-segment (24) are at least in part in meandering form.

6. Temperature sensor as defined in claim 1, **wherein** the segment (22) has a cross-segmental dimension covering the majority of the length (L) of the temperature sensor (10) which is greater than the cross-sectional dimension of the sub-segment (24).

7. Temperature sensor as defined in claim 1, **wherein** the segment (22) and sub-segment (24) form a resistive path of uniform thickness, the width of the segment (22) being greater than the width of the sub-segment (24).

8. Temperature sensor as defined in claim 7, **wherein** the resistive path consists of a fired conductive paste.

9. Temperature sensor as defined in claim 1, **wherein** the segment (22) and/or the sub-segment (24) are formed by at least two resistive paths arranged one above the other, these being separated by insulating layers.

10. Temperature sensor as defined in claim 1, **wherein** the segment (22) and the sub-segment (24) are covered by or imbedded in an insulating layer (26).

11. Temperature sensor as defined in claim 9, **wherein** the insulating layers are ceramic dielectric layers.

12. Temperature sensor as defined in claim 1, **wherein** the segment (22) and the sub-segment (24) have different material compositions.

13. Heating device (40) for hot runner systems with a configuration of heating elements (42) which are in thermal contact with a manifold or nozzle body (K), and with a temperature sensor (10) as defined in claim 1, **wherein** the temperature sensor (10) is a measuring element located on or in the manifold or nozzle body (K).

14. Heating device as defined in claim 13, **wherein** the heating elements (42) consist of electrical heat conducting paths (44) adapted to suit the performance requirements.

15. Heating device as defined in claim 13, **wherein** the heat conducting paths (44) are at least partially in meandering form and/or bifilar.

16. Heating device as defined in claim 14, **wherein** the electric resistance of the heat conducting paths (44) in an intermediate section (B) of the manifold or nozzle body (K) is lower than in the top area (O) or the end or tip area (E).

17. Heating device as defined in claim 14, **wherein** the heat conducting paths (44) have or form at least one zone (46) in the end area or tip area (E) of the manifold or nozzle body (K) which has an electric resistance greater than that in the remainder of the heat conducting paths (44), with the sub-segment (24) of

the temperature sensor (10) penetrating into a recess (47) of the high-resistance heat conductor zone (46).

18. Heating device as defined in claim 17, **wherein** the thermal sensor segment (24) is surrounded by closely grouped heat conducting paths (44) in the high-resistance zone (46).

19. Heating device as defined in claim 14, **wherein** the heat conducting paths (44) are applied to an insulating layer (58) and covered by a further insulating layer (59).

20. Heating device as defined in claim 19, **wherein** the temperature sensor (10) and heat conducting paths (44) are applied at the same level to the insulating layer (58).

21. Heating device as defined in claim 19, **wherein** the heat conducting paths (44) and the insulating layers (26, 58, 59) consist of fired foils and/or fired thick-film pastes.

22. Heating device as defined in claim 19, **wherein** at least the insulating layer (58) is a ceramic dielectric layer.

23. Heating device as defined in claim 19, **wherein** the dielectric coating (58) is permanently applied to the manifold or nozzle body (K) and is pre-stressed (toughened) in relation to the latter after at least one firing process.

24. Heating device as defined in claim 19, **wherein** the dielectric coating (58) is permanently applied to a base element adapted to be adhered to the manifold or nozzle body (K) through thermal contact.